Session UP1 - Poster Session IX.
POSTER session, Friday morning, October 31
Fran Hill Southeast Exhibit Hall, ACC

[UP1.018] A Prototypical HCX Cryostat Insulated with a Novel Low-Emissivity Foil

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Abstract Submitted
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A Prototypical HCX Cryostat Insulated with a Novel Low-Emissivity Foil[1] PETER SEIDL, LBNL, CHEN-YU GUNG, MIT, ROBERT MANAHAN, LLNL, NICOLAI MARTOVETSKY, LLNL, JOSEPH P. MINERVINI, MIT, GIAN LUCA SABBI, LBNL, JOEL H. SCHULTZ, MIT A cryostat has been built to house two prototypical NbTi superconducting quadrupole focusing magnets developed for the High Current Experiment (HCX) in the US program for Heavy Ion Fusion (HIF). In order to maximize the diameter of the warm beam pipe a novel type of low-emissivity foil with 1 micrometer of aluminum coated on a thin stainless steel sheath were adopted as radiation shields in the beam tube region as well as elsewhere in the cryostat. The emissivity of this radiation shield is less than 0.002 at 4.5 K, about 5 times lower than that of a highly polished aluminum surface. The number of layers of foil needed to achieve acceptable heat leakage and therefore the required clearance for the thermal shield is reduced. The design of the cryostat is briefly described, and the cryostat fabrication using low-emissivity foil is discussed. The test results of the heat leakage into the LHe compartment and the performance of the quadrupole magnets reassembled in this cryostat are presented.

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☐ Prefer Oral Session
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Special instructions: Please locate this poster near "Fabrication and testing of a superconducting quadrupole for heavy ion inertial fusion"

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